



Assessment Number **BTC 14254FA**

A FIRE TEST ASSESSMENT ON A LOADBEARING WALL  
CONSISTING OF OSB FACE AND POLYURETHANE  
CORE, CLAD ON THE EXPOSED FACE WITH 19mm  
GYPROC PLANK AND 12.5mm GYPROC FIRELINE,  
CONDUCTED IN ACCORDANCE WITH F.T.S.G.  
RESOLUTION No. 82 /PPFP GUIDE.

Assessment Date: 2<sup>nd</sup> November 2005

[www.btconline.co.uk](http://www.btconline.co.uk)

Applicant: **SIP Building Systems Limited**  
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**Applicant:** SIP Building Systems Limited



A FIRE TEST ASSESSMENT ON A LOADBEARING WALL CONSISTING OF OSB FACE AND POLYURETHANE CORE, CLAD ON THE EXPOSED FACE WITH 19mm GYPROC PLANK AND 12.5mm GYPROC FIRELINE, CONDUCTED IN ACCORDANCE WITH F.T.S.G. RESOLUTION No. 82 /PPPF GUIDE.

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## DETAILS OF THE REQUEST

It is required to assess the following constructions for fire resistance performance if tested in accordance with BS476: Part 21:1987:

Previously tested construction detailed in BTC13687F, as under test evidence, with the following requested changes to construction:

1. Increase in panel thickness from 125mm to 150mm
2. Plasterboards fixed to timber battens rather than direct fix.
3. Increase in OSB skin thickness from 11mm to 15mm
4. Combination of the above



**THE ASSESSORS**


The Building Test Centre operates as an independent accredited test house for the construction industry. The Building Test Centre has unrivalled experience in the development of drywall systems. The Building Test Centre is UKAS accredited under No. 0296 and 0296SI for fire resistance, reaction to fire, acoustic and structural testing. The Building Test Centre is wholly owned by British Gypsum Limited a major manufacturer of building products.

The Building Test Centre is a founder member of the Fire Test Study Group an organisation comprising the UKAS accredited fire test laboratories conducting fire testing in the UK primarily for building control approval. The aim of the group is to ensure a common interpretation of test standards by all laboratories.




**ASSESSMENT AUTHORISATION**

Assessment Author



**Steven Harms**  
 BEng(Hons.), MIFireE  
 Fire Test Manager

Reviewing Assessor



**Philip Barnes**  
 BTC Testing Manager

Assessment Date                      2<sup>nd</sup> November 2005

This assessment is not valid unless it incorporates the Declaration by Applicant form duly signed by the applicant.

## **TEST EVIDENCE**

The test evidence used in this assessment has been used under the authorisation of the test report owner and has been used with their permission (see Pages 9 and 10). Furthermore, the test evidence has been reviewed in accordance with Annex D of the PFPF guide to ensure that the test reports are still valid.

### **BTC 13687F**

**A FIRE RESISTANCE TEST ON A LOAD BEARING WALL CONSISTING OF OSB FACE AND POLYURETHANE CORE CLAD ON THE EXPOSED FACE WITH A SINGLE LAYER OF 19mm GYPROC PLANK AND 12.5mm GYPROC FIRELINE BOARD CONDUCTED IN ACCORDANCE WITH BS 476: PART 21: 1987: Clause 8.**

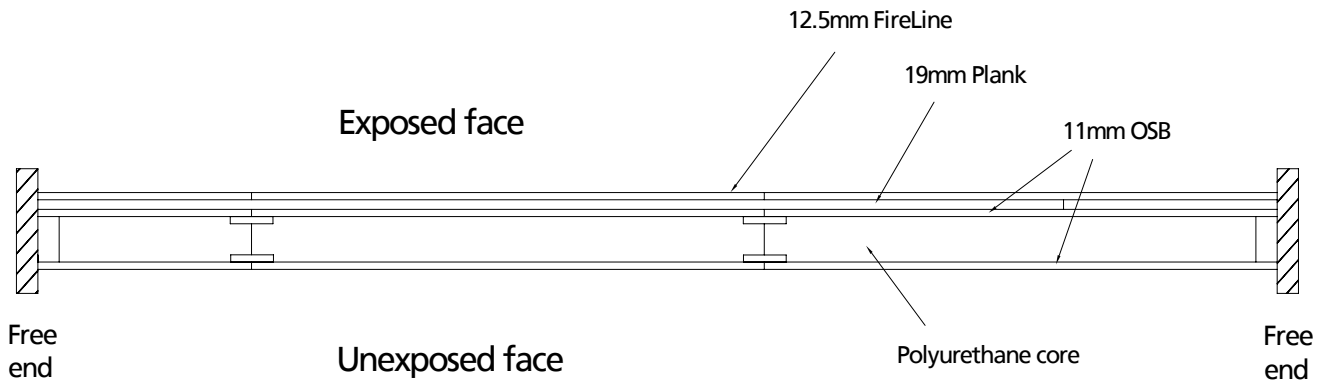
The specimen was constructed in a refractory concrete lined steel restraint frame having an opening of 3000mm high x 3000mm wide.

The test panel was supplied pre-fabricated and consisted of 11mm thick OSB panels with a polyurethane core. OSB splines, 11mm x 100mm, were used in the joints of the test panel and fixed with urethane sealant and 63mm galvanised nails at 150mm centres. The test panel was fixed at the head to the spreader beam using wood screws on the exposed and unexposed face. The vertical edges of the test panel were not fixed to the perimeter test frame, and the gaps between the specimen and the frame lining were filled with 50mm rock mineral wool gasket.

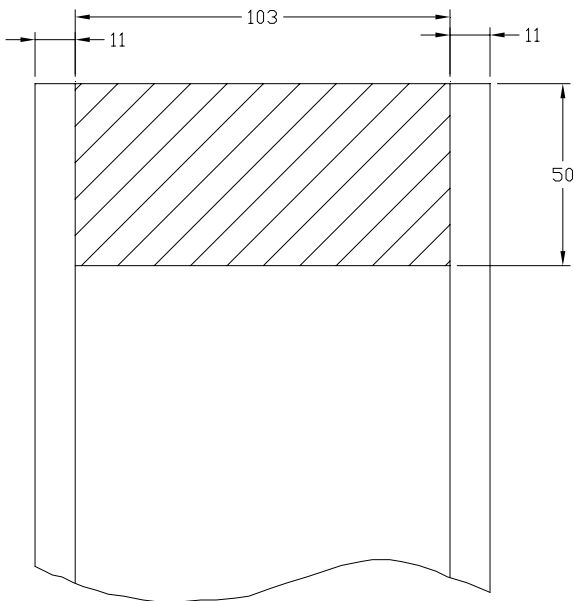
The test panel was lined on the exposed face with a single layer of 19mm Gyproc Plank (positioned horizontally), fixed with 32mm Gyproc Drywall screws at 600mm centres and a single layer of 12.5mm Gyproc FireLine, fixed with 42mm Gyproc Drywall screws at 300mm centres (See figures 1 – 6 for test specimen construction details).

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler. All screw heads were spotted using Gyproc Joint Filler.

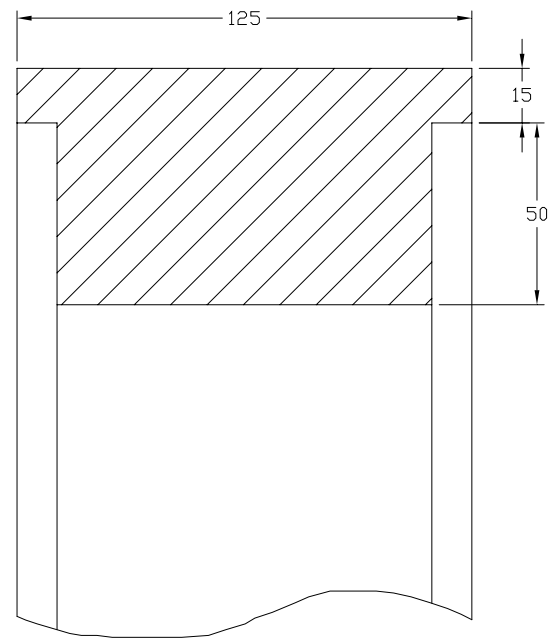
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**Figure 1.** Cross-sectional view of wall.



**Figure 2.** Cross-section of side channel.



**Figure 3.** Cross-section of head/base channel.

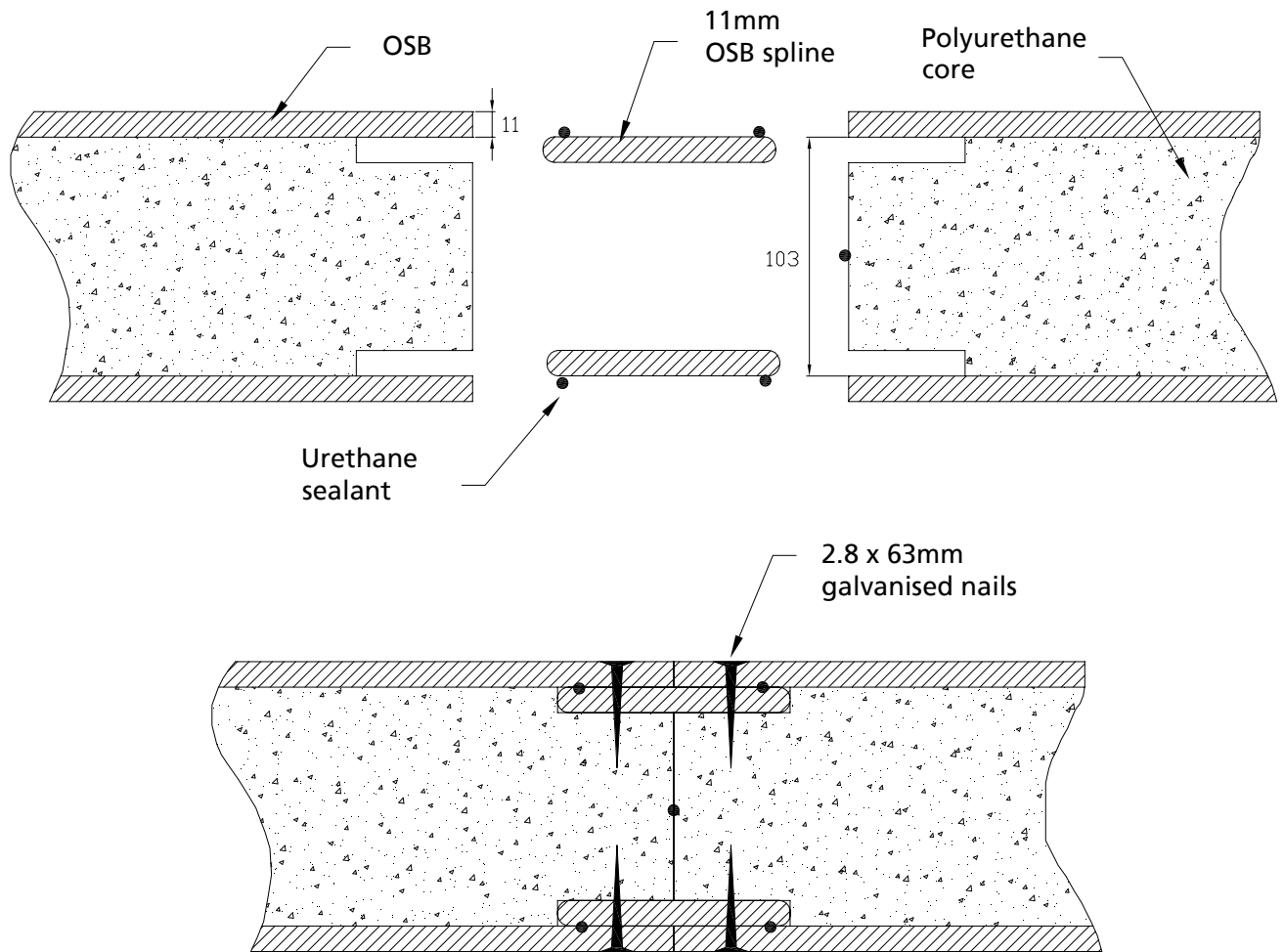
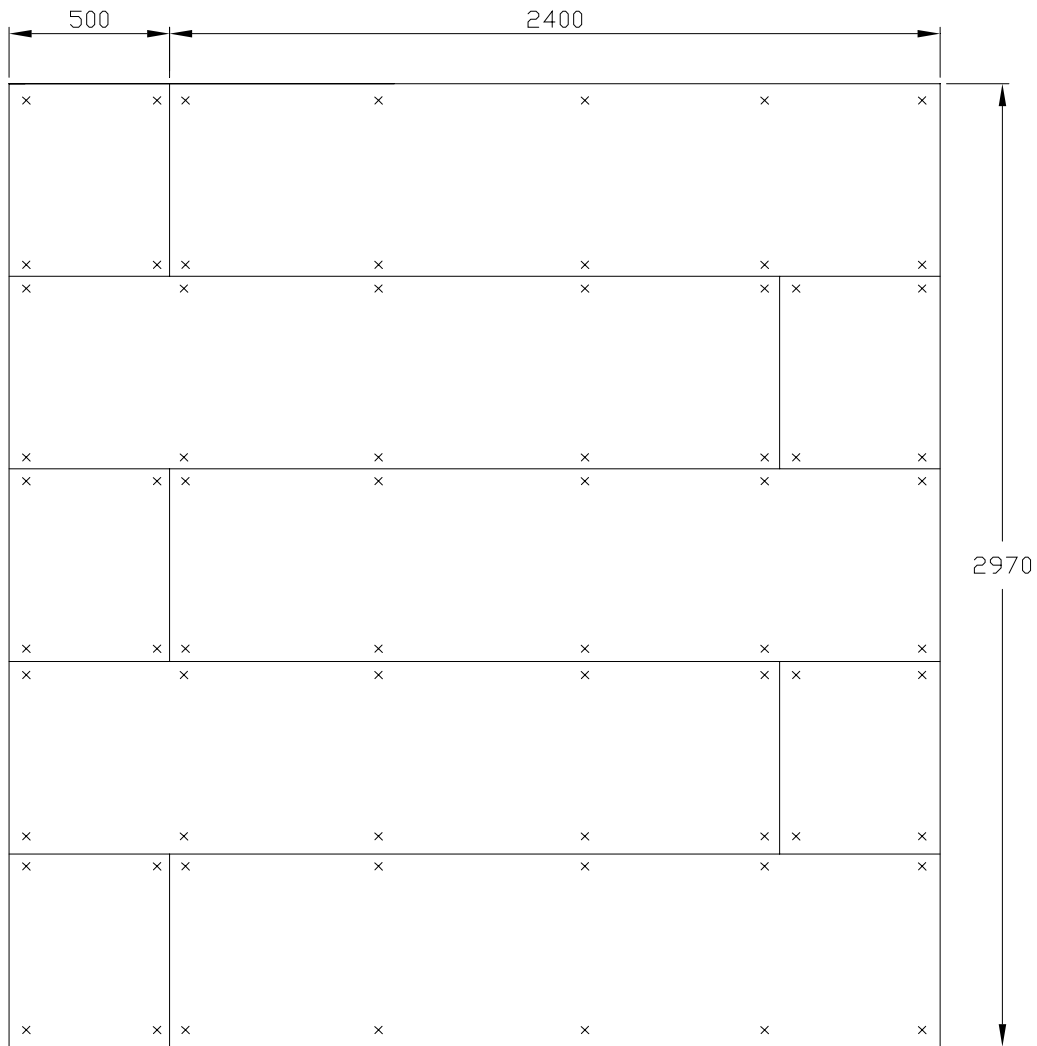
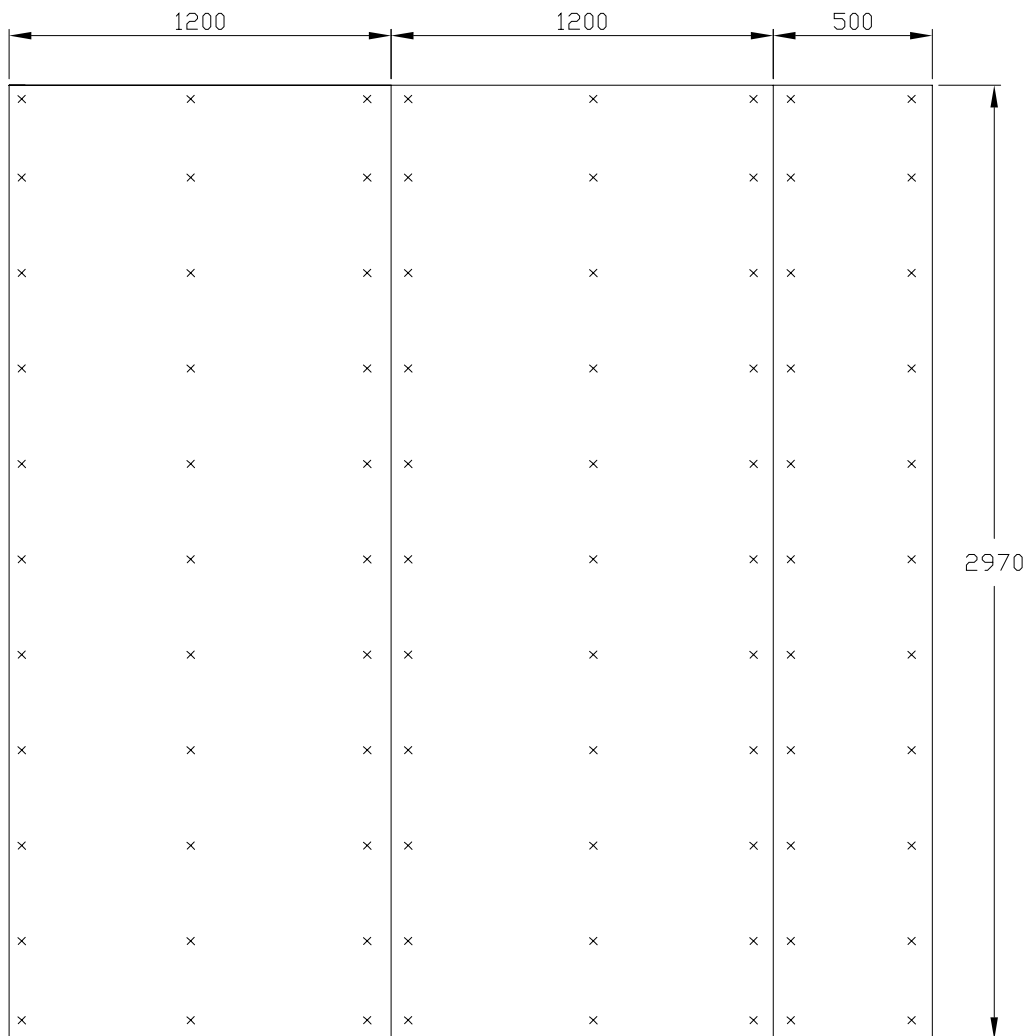


Figure 4. Joint detail.





**Figure 5.** Board and fixings layout of 19mm Plank as viewed from the exposed face.



**Figure 6.** Board and fixings layout of 12.5mm FireLine as viewed from the exposed face.

*The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.*

## TEST MATERIALS

### Gyproc FireLine

Nominally, 3000mm x 1200mm x 12.5mm, manufactured by British Gypsum Limited.

Actual surface density:	10.32kg/m <sup>2</sup>
Actual thickness:	12.68mm
Board identification numbers:	242704 04:59
Moisture content:	0.31%

The surface density was calculated using the actual weight and size of all the boards used in the test specimen.

### Gyproc Plank

Nominally, 2400mm x 600mm x 19mm, manufactured by British Gypsum Limited.

Actual surface density:	14.90kg/m <sup>2</sup>
Actual thickness:	19.04mm
Moisture content:	0.34%

The surface density was calculated using the actual weight and size of all the boards used in the test specimen

### Pre-fabricated panel

- i) 11mm thick OSB board.
- ii) Polyurethane core (density 42kg/m<sup>3</sup>).
- iii) 11mm thick OSB splines.
- iv) Treated softwood channels (head/base and sides).
- v) Urethane sealant.
- vi) 2.8 x 63mm galvanised nails.

Pre-fabricated test panel supplied by ATC Ltd.

### Fasteners

- i) 32mm Gyproc Drywall screws
- ii) 42mm Gyproc Drywall screws.
- iii) Wood screws.

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All fasteners were supplied by The Building Test Centre.  
Miscellaneous components

- i) Gyproc Paper Joint Tape.
- ii) Gyproc Joint Filler.
- iii) Gyproc Bonding Coat.

Miscellaneous components supplied by The Building Test Centre.

The tested construction achieved the following results:

Loadbearing capacity	70 minutes
Integrity	70 minutes
Insulation	70 minutes

The test was carried out in accordance with BS476: Part 21:1987 taking into account Fire Test Study Group standard interpretations where appropriate. The test was carried out on the 13<sup>th</sup> December 2005 at the Building Test Centre, UKAS accreditation No. 0296. The test was carried out on behalf of ATC Limited.

## **DISCUSSION**

The tested construction, detailed in test report BTC13687F, achieved 70 minutes loadbearing capacity, integrity and insulation performance, providing a significant margin of safety considering a target performance of 60 minutes.

The use of the Field of direct application of test results described in European test standard BS EN 1365-1: 1999 'Fire Resistance Tests for Loadbearing Elements : Walls' is an acceptable method of determining allowable changes, and can be applied to results obtained from testing to BS 476: Part 21: 1987. Both BS EN 1365-1: 1999 and BS 476: Part 21: 1987 are currently referred to in The Building Regulation, Approved Document B as acceptable methods of demonstrating fire resistance performance.

Considering the Field of direct application of test results described in BS EN 1365-1: 1999 'Fire Resistance Tests for Loadbearing Elements : Walls', the following changes, applicable to the tested construction, are allowed:

- Increase in the thickness of the wall
- Increase in the thickness of component materials
- Decrease in distance of fixing centres.

Following these recognised and accepted rules, by increasing panel thickness from 125mm to 150mm and/or increasing OSB skin thickness from 11mm to 15mm, as requested, the fire performance of the construction is not reduced.

Fixing the boards to timber battens again falls under the above rule of increasing the wall thickness, which is allowed. Additional consideration to fixings must be made.

Provided the battens are positioned behind all fixings and board joints, ensuring fixing centres are not reduced from those shown in figures 5 and 6, and screw lengths are increased to ensure similar penetration onto the OSB facing to that tested, fire resistance performance will not be reduced. Experience indicates that lower temperatures can be measured on the back face of boards with a cavity behind, compared with boards without a cavity behind.

As the above changes are considered not to reduce fire resistance performance, combinations of the above are acceptable.

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## CONCLUSION

In view of the foregoing evidence, it is our opinion that if the constructions described under DETAILS OF THE REQUEST were subjected to fire resistance testing, in accordance with BS 476: Part 21: 1987, the following periods of fire resistance would be achieved:

<b>Loadbearing capacity</b>	<b>60 minutes</b>
<b>Integrity:</b>	<b>60 minutes</b>
<b>Insulation:</b>	<b>60 minutes</b>

Providing the following considerations are observed:

- where applicable, timber battens are positioned behind all plasterboard joints and fixings
- where applicable, screw lengths are increased to penetrate through the battens and into the OSB facing.

## LIMITATIONS

This assessment addresses itself solely to the ability of the partition system described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to the assessing authority the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years after which time it is recommended that it be submitted to the assessing authority for re-appraisal. The opinions and interpretations expressed in this assessment are outside the scope of UKAS accreditation.

**Applicant:** SIP Building Systems Limited

**DECLARATION BY THE APPLICANT**

We the undersigned confirm that we have read and complied with the obligations placed on us by FTSG Resolution No. 82.


We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be subjected to a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusion of this assessment.

If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

Signed:



Print Name .Peter Jones.....

For and behalf of SIP Building Systems Limited.

**Applicant:** SIP Building Systems Limited

**AUTHORITY FOR USE OF TEST EVIDENCE**

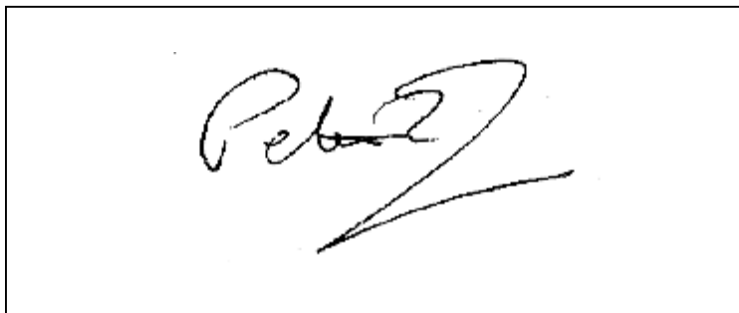
Test Report Numbers:       BTC 13687F

We the undersigned agree to the above Test Reports being used as supporting evidence for the following assessment:

**A FIRE RESISTANCE TEST ON A LOAD BEARING WALL CONSISTING OF OSB FACE AND POLYURETHANE CORE CLAD ON THE EXPOSED FACE WITH A SINGLE LAYER OF 19mm GYPROC PLANK AND 12.5mm GYPROC FIRELINE BOARD CONDUCTED IN ACCORDANCE WITH BS 476: PART 21: 1987: CLAUSE 8.**

Assessment client:         SIP Building Systems Limited

Signed:



Print Name .....Peter Jones.....

Job Title:     ..Consultant.....

For and behalf of SIPS Building Products Limited.

**Applicant:** SIP Building Systems Limited